

On the origin of a sustainable Europe

Mart Lubben, Sybren Bosch, Ingrid Odegard – Junior council members – Council for the Environment and Infrastructure (Rli)

The present-day world is under large stress: Of the nine *planetary boundaries*, four have already been crossed, and many others will be crossed in the coming decades if no structural changes take place in the way our society operatesⁱ. In addition to these ecological challenges, there are many social and societal sustainability challenges that are harder to quantify, but not less pressing. We believe Europe has a commitment to the rest of the world to take the lead in the transition towards a sustainable development of our planet.

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We chose the concept of evolution to provide a perspective for systems in transition. Evolution is a natural process of change, “directed” by the characteristics of the system. Stable characteristics create a stable system. The most well-known example is the stable and unique development of the biosphere on the Galápagos Islands – on which Darwin has based his evolution theory. Although evolution is mostly applied to ecosystems, we can choose to also view our technosphere and sociosphere from an evolutionary point of view. The characteristics of these systems, such as legislation, taxes and a changing climate, steer evolutionary changes in both spheres.

Evolution, whether in ecosystems or in our techno- or sociosphere, does not have a goal in itself. Instead of defining the desired goal (electric cars for everyone!) or tweaking policy and markets to help attain that goal, we could look at the characteristics of our system and analyse why evolution towards a long-term sustainable planet is not happening naturally. The key reason is that our present-day system inherently favours unsustainable consumption, because externalities are not monetized (i.e. climate or biodiversity impact).

Our vision for a sustainable Europe in 2030 is a system, where evolution takes place based on characteristics that fully support the transition to a long-term sustainable state. The core of the required change in characteristics is the inclusion of external costs in all business and consumer transactions. This leads to a European society where consumers trust producers to produce sustainably, where individuals come together in communities as equals, and where commercial, governmental and non-profit organisations co-create innovative concepts. Unsustainable products and services become unattractive and naturally disappear.

The challenge seems enormous, and strong voices exert power to retain the present-day state of the system. Threats about the loss of labour keep politicians from taking bold action. Having winners and losers is however a natural consequence of evolution, and systems always move towards a new steady state. Returning to the Galápagos, recent research provides evidence that quick changes take place in systems when the characteristics of the systems changeⁱⁱ: the biosphere on some islands is rapidly changing due to changing ocean currents and – consequently – changing humidity around the islands.

Although evolution is often seen as a slow and gradual process, possibly too slow for the quick change required to achieve a sustainable Europe, we believe that applying evolutionary perspectives can result in quick changes. Also, we believe it is the only way to reach a stable and sustainable Europe that can function in the long term. Changing characteristics can result in fast changes in the system. And the need for these changes is now larger than ever before, as we face crossing some more planetary boundaries in the upcoming decades.

1 UNDERSTANDING THE EVOLUTIONARY PERSPECTIVE

Evolution has always taken place. Species have developed for many millions of years, driven by changes in characteristics of the ecosystems they have been living in. The evolution theory, first published by Charles Darwin in *The Origin of Species* in 1859, has given us understanding of the way both individual species and ecosystems as a whole develop. These lessons inspire us in thinking about the sustainability transition we face.

Darwin’s visit to the Galápagos islands triggered the development of his evolution theory (although Darwin developed the theory only two decades later, having long returned to London). His study of various types of finches, that have different shapes of beaks based on the characteristics of their hunting grounds, made him understand that evolution is based on characteristics of the surrounding ecosystem. This theory still holds.

At present, the Galápagos are suffering from changes in ocean temperatures. These go beyond the relatively well-known incidental changes of El Niño and La Niña, respectively warm and cold ocean temperatures that return in multi-year cycles. Structural warming of waters around the islands result in (i) a reduction of nutrient-rich cold ocean waters, and (ii) a reduced humidity around the islands due to smaller temperature changes between ocean and atmosphere. These changes have primarily taken place over the last decade, a very minor timescale compared to the decades of evolution that took place before. Still, the ecosystem response is quick: many hundreds of unique types of plants,

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well-adapted to the stable humid environment at the islands, have gone extinct and have been replaced by plants that are better suited to this new environment. The famous marine iguanas suffer population drops because of the strong reduction of nutrients in the water. Evolution of an ecosystem, which was historically perceived as a gradual process, proves to be able to take place very quickly.

Although we see this quick degradation of this unique natural system as a loss of nature and biodiversity, it does provide hope for applying the evolutionary perspective. Apparently, changing system characteristics can have a quick and dominant influence on the way evolution of systems takes place. We have the power to change characteristics in the socio- and technosphere to steer the evolutionary development of our society. It is this change in perspective that we consider necessary for the development of a sustainable Europe.

2 THREE CHALLENGES FOR TAKING ACTION

In practice, we see three challenges that slow down action, and which spur many debates in doing so. These challenges support the statement that evolutionary principles do, at present, move Europe towards a less sustainable system, instead of directing us to a more sustainable system.

Challenge 1: It is not clear who should take the lead

In all sustainability transitions, the key question is who takes the lead in moving towards action. In the development after the second World War, enormous governmental initiatives have been set up for reconstruction and social planning. In the 70's and 80's, this was followed by top-down environmental regulations and large-scale spatial planning initiatives. These dynamics continued into the 90's. From the 00's, and especially after the financial crisis hit in 2008, governments have been reducing their leadership, with the intention of business and people taking more initiative. This reduced leadership of the government also applied to sustainable development.

Since then, there has been a constant struggle on who should take initiative in large-scale societal developments. Governments set ambitions and long-term targets in a top-down way, in order to keep up with the Paris Agreement and the Sustainable Development Goals. At the same time, governments point to businesses and local societies to take bottom-up action. These businesses and society want to take action, but are not favoured by, among others, present-day tax and legal systems.

The aims in policy and expectation of society are not supported by the incentives of the system ('characteristics' in evolution). Bottom-up points to top-down to create the right incentives; top-down points to bottom-up to start taking action. Disappointment from both sides is the natural consequence, which we see happening all around us. Developing top-down incentives that enable bottom-up development to take the right actions can break this dilemma.

Challenge 2: Consumers do not pay for externalities, citizens do

The fourteenth century Syrian scholar Ibn Taymiyyah wrote: *"If desire for goods increases while its availability decreases, its price rises. On the other hand, if availability of the good increases and the desire for it decreases, the price comes down."*ⁱⁱⁱ This is the basis for the traditional economic theory^{iv} that product prices for consumer goods are based on the interaction between supply and demand. In our present day economy, however, the consumer price does not reflect all costs because of exclusion of externalities (e.g. CO₂-emission or water pollution). The supply and demand are based on an incomplete price, creating a malfunctioning system where individual choices create common costs.

Non-sustainable options are often the cheaper options, and therefore favoured by many consumers. Choosing a non-sustainable option increases demand for these non-sustainable options, and thereby increases the amount of these products that are produced. This increases the environmental impact, of which the impact returns to the society as a whole. To take a system's perspective: on the one hand, certain producers increase the stress on the natural system, and consumers of their products do not pay for these externalities. On the other hand, the government (and thereby its citizens) do need to fund restoration of the natural system. Externalities are thus not paid by consumers, but by all citizens.

Challenge 3: There is no common vision on *how* to achieve a sustainable Europe

Although there are many initiatives to develop visions for Europe, most of these visions have developed a final state of transition, and show what Europe (or the world) should look in a number of years. The most recent global example are the Sustainable Development Goals. Many other visions exist on a European level, for example on the circular economy^v, but the oil- and gas industry^{vi} for example also has a vision on the future of their role in Europe. These visions share an image of a future Europe, and often include an agenda to move into action. Most of these agendas do not, however, move beyond identifying the undesirable states of today's society (e.g. not everyone has clean water), or address the fundamental reasons why we are in this state in the first place.

Consequently, the required changes in the system characteristics of the European socio- and technosphere are not addressed. Moving towards action is done for each vision individually. The consequences of these action agendas are sectoral and scattered. From an evolutionary perspective, evolution is still not directed towards an overall desirable direction.

What we do need, and what we lack, is a vision on the process of change towards a sustainable Europe. Not to envision an end state (A circular economy! Fair income for all!), but to envision a process to change the characteristics of the system. Moving to these more fair characteristics, which we will elaborate on in the next section, requires a more integral co-operation between both member states and sectors, in which the European Commission sets the direction, and in which various stakeholders fill in the direction on how to get there.

3 TAKING ACTION BY APPLYING THE EVOLUTIONARY PERSPECTIVE

The evolutionary principles behind variation and selection have built a resilient natural system around the planet over many thousands of years. As stated before, we believe that applying these principles to European development will help to create a sustainable Europe. This means a move away from the dominant technology-oriented, solution-development policies. Instead, it focuses on two drivers:

- Providing the right incentives by integrating externalities in pricing, creating sustainable selection.
- Increasing variation by supporting local development of bottom-up sustainable initiatives to accelerate the transition towards a sustainable Europe.

Direction 1: Providing the right incentives

In nature, conditions (e.g. temperature) and environments (e.g. forestation) change. The success of evolution is based on the way variation and selection always leave the most suited organism to thrive in a specific ecological environment. Because we ourselves have at some point chosen the characteristics of our present-day socio- and technosphere, we should be able to change these characteristics. The right characteristics will create the incentives that will steer evolution in a desirable – sustainable – direction.

The core of the required change in characteristics is integrating externalities in pricing.

The core of the required change in characteristics is integrating externalities in pricing. Externalities are changes in environmental or social aspects, that have consequences (both directly and indirectly, both financial and otherwise), but are currently not monetarized. Think of climate change for example, of loss of biodiversity, or of reduced living conditions. When these aspects are not included in consumer prices, consumers have to weight their own financial (dis)advantages against the societal and natural (dis)advantages. Consumer choices matter, but many individuals have to decide to make a change before change actually happens and price remains an important motivator. When externalities are included in consumer prices, the responsibility of sustainable consumption is not placed with uninformed individuals. Instead, commercial interest will naturally lead businesses to sustainable innovation to reduce price and increase their market share. Furthermore, monetizing externalities will create more long-term stability and a level playing field, because adjustments to policy (such as subsidies) will be less of an influencing factor and companies are treated equally.

When integrating these impacts in the prices of products and services, it is important to include the entire supply chain in doing so – including future recycling. Integrated pricing increases the transparency of selection, and will consequently grow the variation of sustainable options. Less sustainable options will find it harder to compete, which will lead to their extinction. Furthermore, the financial gains will have to be used to solve or counter the ecological and societal externalities.

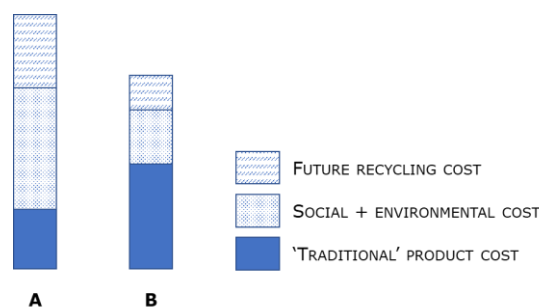


Figure 1 | Integrated pricing for a non-sustainable product (A) and a more sustainable product (B)

Direction 2: Increasing variation in sustainable alternatives

Variety in a natural system is defined by differences in DNA in replication processes. Variation creates opportunities, because individuals with small differences might be better adapted to changing (and thus different) conditions. Selection in a natural system takes place because of threats: individuals that are less well adapted to changing conditions, are disadvantaged and less likely to be successful and reproduce. Where changing system characteristics is the basis of determining the direction of evolution, increasing variation will help develop alternatives that are able to thrive under the new system characteristics.

Many good examples of increasing variation are already there. Innovation programs, research funds and large support schemes for regional development throughout Europe aim to support local solutions towards a sustainable Europe. Scaling and structural implementation of the developed alternatives has, however, been proven difficult, because of the characteristics of the larger European system (i.e. taxation schemes that focus primarily on prices without externalities). Increasing variation will only be truly helpful when such system characteristics that enable scaling, are in place. Increasing variation is therefore primarily an accelerator of achieving a sustainable Europe.

Moving into action

Many positive initiatives are already in place. These do, however, focus primarily on increasing variation. The basic characteristics in the larger-scale European system still do not favour sustainable alternatives, as prices do not include negative externalities. There are still tax-favouring schemes for large corporates, and a large portion of the European budget still finances agricultural production without any serious incentive towards sustainable practices. A structural review of macro-level conditions is required, while European politics at present often discuss micro-level individual policies. This type of process is too slow and too unreliable.

Changing the focus from the envisioned future to the process of change can help to overcome this focus on the micro-level. Europe already takes the lead on the direction of change (the envisioned sustainable futures), but should work more intensely on the process of change. Which system characteristics are at the moment in place? Which of them support the transition towards a sustainable Europe, and which do not? Which stakeholders do we really need to move this policy into action in the complex European society consisting of over 28 member states, 500 million people, and 26 million active enterprises?

4 OUR COMMON FUTURE

In 1987, the World Commission on Environment and Development published a famous report under leadership of chairwoman Gro Harlem Brundtland. The name of the report was positively formulated, and that is why Our Common Future (commonly referred to as the Brundtland report) might have triggered such a strong response. The report described the necessity to change our way of behaviour, to work towards a bright future.

The structure and naming of the various sections of the report continues on this positive outline, despite the serious message that was being transferred. The introduction already sets the tone: from one earth to one world. The report continues with common concerns (e.g. economic development), common challenges (e.g. scarce resources and climate change), and closes with common endeavours: actions that, only when taken together, can change the course of our future.

We believe that, for Europe, there is need for an attractive and visionary view on a sustainable Europe. Developing a vision for a sustainable Europe by defining the physical elements (e.g. windfarms, solar panels and electric cars), while ignoring the way the system operates, is insufficient for the transition we face. We believe in the power of a vision on *how* to achieve a sustainable Europe on a system level, and that the core of such a vision is a set of system characteristics which favour long-term sustainable development.

Common endeavours

A little over 30 years after publication of the Brundtland report, the need for common endeavours is larger than ever before. This endeavour starts with leadership from the European Union as an institution: stop narrowly-focused discussions on single policies, and start a macro-level strategy based on evolutionary principles. With clear and long-term incentives in place, businesses will be able to join in this endeavour and develop long-term sustainable alternatives for both products and the services we require to retain our level of welfare.

We dream about a sustainable Europe in 2030, and believe this is possible. Although we do not know the exact path towards a sustainable Europe in 2030, nor the image of what a sustainable Europe will look like, we do see that a new type of leadership is required to bring this into reality. To work towards a common future which is bright for all, our generation is prepared to stand up and show direction. We ask the European Commission to help us realise our dream. Let 2017 be the origin of a sustainable Europe.

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ⁱ Steffen et al. (2015) *Planetary boundaries: Guiding human development on a changing planet*

ⁱⁱ National Geographic Magazine (2017) *A Warming Planet Jolts the Iconic Creatures of the Galápagos*

ⁱⁱⁱ Hosseini, Hamid S. (2003). *Contributions of Medieval Muslim Scholars to the History of Economics and their Impact: A Refutation of the Schumpeterian Great Gap*

^{iv} Marshall, Alfred (1920). *Principles of Economics*

^v Ellen MacArthur Foundation (2015) *Growth Within: a circular economy vision for a competitive Europe*

^{vi} Deloitte (2014) *Vision 2040 Global scenarios for the oil and gas industry*